

Research Summary

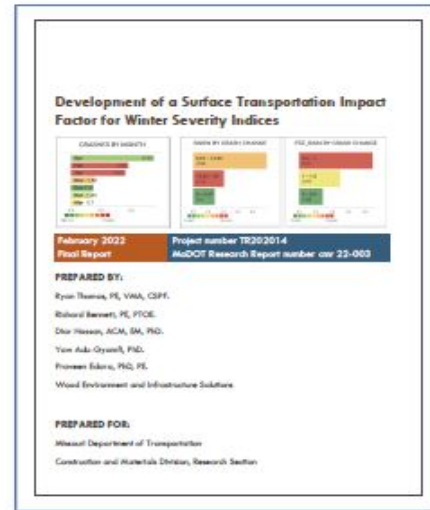
Development of a Surface Transportation Impact Factor for Winter Severity Indices

MoDOT is a data driven Department of Transportation, as represented by the MoDOT Tracker and numerous internal efforts to use data to improve the overall organization. MoDOT's winter weather response is no exception and the need for a Winter Severity Index (WSI) process that will capture the impacts to the travelling public and MoDOT was identified.

While most WSI systems across the US and Canada are based on the significant weather variables influencing winter season severity, the MoDOT WSI developed in this research effort develops a tool that tells the broader story of winter weather impacts in Missouri. The centerpiece of the MoDOT WSI is a dashboard that provides visual analytics with the impacts of winter weather across the state that can be easily filtered to display broad impacts over several years to the impacts of specific storms and specific MoDOT maintenance areas.

For instance, the dashboard tells us that over the years of 2017 to 2019, winter weather related crashes increased on the average per maintenance area by three, average crash costs were \$660,000, average delay costs were \$430,000 and average MoDOT maintenance costs were \$14,000.

If we look specifically at a severe storm that occurred on January 11, 2019, the winter weather



related crashes increased on the average per maintenance area by five, average crash costs were \$760,000, average delay costs were \$740,000 and average MoDOT maintenance costs were \$30,000.

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And to look even more specifically at the Hampton maintenance area (in St. Louis County) during the January 11, 2019, storm, the storm related crashes increased by 33, crash costs were \$2,500,000, delay costs were \$4,200,000 and MoDOT maintenance costs were \$44,000.

While this analysis is valuable, a key objective of the MoDOT WSI is also to develop a normalized picture of the winter weather impacts so that an accurate comparison can be made across maintenance areas and districts in different regions of Missouri that does not skew the impacts to the heavily travelled and highly impacted urban areas. This will allow MoDOT to better compare response practices, winter



weather management, and performance across the various diverse regions of Missouri. An example of the complete normalized dashboard for 2017 to 2019 is shown in the report.



Figure 1: Missouri ASOS locations

Project Information

PROJECT NAME: TR202014—Impact Factor for Winter Severity Indices

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PROJECT COST: \$139,966

LEAD CONTRACTOR: Wood Environmental & Infrastructure Solutions, Inc.

PRINCIPAL INVESTIGATOR: Richard Bennett

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